What is claimed is:

1. A fuel cell system comprising:

   (a) at least one anode comprising a gas diffusion layer and a catalyst, said anode connected to a fuel gas control unit controlling a flow of an fuel gas;

   (b) at least one cathode comprising a gas diffusion layer and a catalyst, said cathode connected to an oxidizing gas control unit controlling a flow of an oxidizing gas;

   (c) an electrolyte membrane disposed between said anode and said cathode;

   (d) a load;

   (e) at least one cell voltage detection unit;

   (f) at least one external electric source capable applying a current to control the voltage of said cathode; and

   (g) a control unit receiving information from and/or capable of controlling said fuel gas control unit, oxidizing gas control unit, cell voltage detection unit, load and said external electric source.

2. The fuel cell system of claim 1 comprising a fuel cell stack comprising a plurality of anode and cathode pairs.

3. The fuel cell system of claim 1 wherein each external electric source is connected to a single anode and cathode pair.

4. The fuel cell system of claim 1 wherein there the external electric source is connected to said fuel cell stack.

5. The fuel cell system of claim 1 wherein each voltage detection unit is connected to a single anode and cathode pair.

6. The fuel cell system of claim 1 wherein there the voltage detection unit is connected to said fuel cell stack.

7. The fuel cell system of claim 1 wherein the current results in a voltage of about 0.2V at the at least one cathode when the fuel cell system is not producing power.

8. The fuel cell system of claim 1 wherein the current maintains a voltage between the anode and the cathode of about 0.6V to about 0.8V when the fuel cell system is not producing power.

9. The fuel cell system of claim 1 wherein the current provides a voltage the between the anode and cathode that does not decrease to more than a threshold level.

10. The fuel cell system of claim 9 wherein the threshold level is about 0.75V.

11. A method of operating a fuel cell system comprising at least one anode and cathode pair, comprising;

(a) starting fuel cell power generation; and

(b) stopping fuel cell power generation, by;

(i) stopping flow of an oxidizing gas;

(ii) maintaining flow of a fuel gas to avoid degradation of said anode;

(iii) applying current from an external voltage source to maintain a voltage between the anode and/or the cathode of about 0.6V to about 0.8V; and

(iv) decreasing flow of a fuel gas.

12. The method of claim 11 wherein the current results in a voltage of about 0.2V at the at least one cathode.

13. A method of operating a fuel cell system comprising at least one anode and cathode pair, comprising;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation by stopping the flow of a fuel gas or an oxidizing gas to said cell, while applying a current from an external voltage source such that the voltage of the between the anode and cathode does not decrease to more than a threshold level and decreasing a flow of a fuel gas.

14. The method of claim 13 wherein the threshold level is about 10% of the initial operating voltage of the fuel cell system.

15. The method of claim 13 wherein the threshold level is about 0.75V.

16. The method of claim 13 wherein the voltage of the at least one cathode is about 0.2V.

17. A fuel cell system comprising:

(a) at least one anode comprising a gas diffusion layer and a catalyst, said anode connected to a fuel gas control unit controlling a flow of an fuel gas;

(b) at least one cathode comprising a gas diffusion layer and a catalyst, said cathode connected to an oxidizing gas control unit controlling a flow of an oxidizing gas;

(c) an electrolyte membrane disposed between said anode and said cathode;

(d) a load

(e) at least one cell voltage detection unit;

(f) at purging gas control unit controlling a flow of a purging gas to purge the anode; and

(g) a control unit receiving information from and/or capable of controlling said fuel gas control unit, oxidizing gas control unit, cell voltage detection unit, load, and said purging gas control unit.

18. The fuel cell system of claim 17 wherein a voltage of about 0.2V is maintained at the at least one cathode

when the fuel cell system is not producing power.

19. The fuel cell system of claim 17 wherein the voltage between the anode and the cathode is maintained at about 0.6V to about 0.8V when the fuel cell system is not producing power.

20. The fuel cell of claim 17 wherein the purging gas is an inert gas.

21. The fuel cell of claim 17 wherein the purging gas is selected from the group consisting of nitrogen gas, hydrocarbon gas or a gas containing a reducing agent.

22. A method of operating the fuel cell system of claim 17 comprising;

(a) starting fuel cell power generation;

(b) disconnection of the load;

(c) stopping fuel cell power generation, by;

(i) stopping the flow of oxidizing gas and the flow of fuel gas after a prescribed period of time following the disconnection of said load; and

(ii) purging the anode with the flow of purging gas after said prescribed period of time has elapsed.

23. The method of claim 22 wherein the prescribed period of time is about 1 to about 10 minutes.

24. A method of operating a fuel cell system comprising at

least one anode and cathode pair comprising;

(a) starting fuel cell power generation;

(b) disconnection of a load;

(c) stopping fuel cell power generation, by;

(i) stopping a flow of an oxidizing gas and a flow of a fuel gas after a prescribed period of time following the disconnection of said load; and

(ii) purging the anode with a flow of a purging gas after said prescribed period of time has elapsed.

25. The method of claim 24 wherein the prescribed period of time is about 1 to about 10 minutes.

26. A method of operating the fuel cell system of claim 17 comprising;

(a) starting fuel cell power generation;

(b) disconnection of the load;

(c) stopping fuel cell power generation, by;

(i) gradually reducing the flow of the oxidizing gas after a prescribed period of time following the disconnection of said load, until the flow of oxidizing gas has stopped;

(ii) gradually reducing the flow of fuel gas after a stopping the flow of oxidizing

gas; and

(iii) purging the anode with the flow of purging gas after the flow of the fuel gas has stopped.

27. The method of claim 26 wherein the prescribed period of time is about 1 to about 10 minutes.

28. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) disconnection of a load;

(c) stopping fuel cell power generation, by;

(i) gradually reducing a flow of an oxidizing gas after a prescribed period of time following the disconnection of said load, until the flow of the oxidizing gas has stopped;

(ii) gradually reducing a flow of a fuel gas after the stopping the flow of oxidizing gas; and

(iii) purging the anode with a flow of a purging gas after the flow of the fuel gas has stopped.

29. The method of claim 28 wherein the prescribed period of time is about 1 to about 10 minutes.

30. A method of operating the fuel cell system of claim 17

comprising;

(a) starting fuel cell power generation;

(b) disconnection of the load;

(c) stopping fuel cell power generation, by;

(i) gradually reducing the flow of the fuel gas after a prescribed period of time following the disconnection of said load, until the flow of fuel gas has stopped;

(ii) gradually reducing the flow of oxidizing gas after a stopping the flow of fuel gas; and

(iii) purging the anode with the flow of purging gas after the flow of the fuel gas has stopped.

31. The method of claim 30 wherein the prescribed period of time is about 1 to about 10 minutes.

32. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) disconnection of a load;

(c) stopping fuel cell power generation, by;

(i) gradually reducing a flow of an fuel gas after a prescribed period of time following the disconnection of said

load, until the flow of the fuel gas has stopped;

(ii) gradually reducing a flow of a oxidizing gas after the stopping the flow of fuel gas; and

(ii) purging the anode with a flow of a purging gas after the flow of the fuel gas has stopped.

33. The method of claim 32 wherein the prescribed period of time is about 1 to about 10 minutes.

34. A method of operating the fuel cell system of claim 17 comprising;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) decreasing the flow of the oxidizing gas and decreasing the flow of the fuel gas a prescribed period of time before the disconnection of the load;

(ii) disconnecting the load; and

(iii)purging the anode with the flow of purging gas after the flow of the fuel gas has stopped.

35. The method of claim 34 wherein the prescribed period of time is about 1 to about 10 minutes.

36. The method of claim 34 wherein said decreasing the

flow of the fuel gas or decreasing the flow of the oxidizing gas is a gradual reduction until flow is stopped.

37. The method of claim 34 wherein said decreasing the flow of the fuel gas or decreasing the flow of the oxidizing gas is a stopping of flow.

38. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) decreasing flow of an oxidizing gas and decreasing flow of an fuel gas a prescribed period of time before disconnection of a load;

(ii) disconnecting the load;

(iii) purging the anode with a flow of a purging gas after the flow of the fuel gas has stopped.

39. The method of claim 38 wherein the prescribed period of time is about 1 to about 10 minutes.

40. The method of claim 38 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of the fuel gas is a gradual reduction until flow is stopped.

41. The method of claim 38 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of

the oxidizing gas is a stopping of flow.

42. A method of operating the fuel cell system of claim 17 comprising;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) decreasing the flow of the oxidizing gas a prescribed period of time before the disconnection of the load;

(ii) disconnecting the load;

(iii) decreasing the flow of the fuel gas; and

(iv) purging the anode with the flow of purging gas after the flow of the fuel gas has stopped.

43. The method of claim 42 wherein the prescribed period of time is about 1 to about 10 minutes.

44. The method of claim 42 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of the fuel gas is a gradual reduction until flow is stopped.

45. The method of claim 42 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of the fuel gas is a stopping of flow.

46. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) decreasing flow of an oxidizing gas a prescribed period of time before disconnection of a load;

(ii) disconnecting the load;

(iii) decreasing a flow of a fuel gas; and

(iv) purging the anode with a flow of a purging gas after the flow of the fuel gas has stopped.

47. The method of claim 46 wherein the prescribed period of time is about 1 to about 10 minutes.

48. The method of claim 46 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of the fuel gas is a gradual reduction until flow is stopped.

49. The method of claim 46 wherein said decreasing the flow of the oxidizing gas or decreasing the flow of the fuel gas is a stopping of flow.

50. A method of operating the fuel cell system of claim 17 comprising;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) continuing the flow of the oxidizing gas for a prescribed first period of

time following a disconnection of said load; then decreasing the flow of the oxidizing gas;

(ii) decreasing the flow of fuel gas a second prescribed period of time prior to the disconnection of said load; and

(iii) purging the anode with the flow of purging gas after the flow of the fuel gas has stopped.

51. The method of claim 50 wherein the first prescribed period of time is about 1 to about 10 minutes.

52. The method of claim 50 wherein the second prescribed period of time is about 1 to about 10 minutes.

53. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) continuing a flow of an oxidizing gas for a prescribed first period of time following a disconnection of a load; then decreasing the flow of the oxidizing gas;

(ii) decreasing a flow of a fuel gas a second prescribed period of time prior to the disconnection of said load; and

(iii) purging the anode with a flow of

purging gas after the flow of the fuel gas has stopped.

54. The method of claim 53 wherein the prescribed period of time is about 1 to about 10 minutes.

55. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising:

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) continuing a flow of an oxidizing gas for a prescribed first period of time following a disconnection of a load; then decreasing the flow of the oxidizing gas;

(ii) decreasing a flow of a fuel gas a second prescribed period of time prior to the disconnection of said load; and

(iii) purging the anode with a flow of purging gas after the flow of the fuel gas has stopped.

56. The method of claim 55 wherein the prescribed period of time is about 1 to about 10 minutes.

57. A method of operating a fuel cell system comprising at least one anode and cathode pair;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation by;

(i) disconnecting a load;

(ii) decreasing a flow of an oxidizing gas;

(iii) applying a current from an external voltage source to maintain a voltage between the anode and the cathode;

(iv) increasing the fuel cell temperature; and

(c) restarting fuel cell power generation by increasing a flow of an oxidizing gas and removing said current.

58. The method of claim 57 wherein the current results in a voltage of about 0.2V at the at least one cathode when the fuel cell system is not producing power.

59. The method of claim 57 wherein the current maintains a voltage between the anode and the cathode of about 0.6V to about 0.8V.

60. The method of claim 57 wherein the current provides a voltage the between the anode and cathode does not decrease to more than a threshold level.

61. The method of claim 60 wherein the threshold level is about 0.75V.

62. The method of claim 57 wherein the voltage of the at least one cathode is about 0.2V

63. A fuel cell system comprising:

(a) at least one anode comprising a gas diffusion layer and a catalyst, said anode connected to a

fuel gas control unit controlling a flow of an fuel gas;

(b) at least one cathode comprising a gas diffusion layer and a catalyst, said cathode connected to an oxidizing gas control unit controlling a flow of an oxidizing gas;

(c) an electrolyte membrane disposed between said anode and said cathode;

(d) a load;

(e) at least one cell voltage detection unit;

(f) at least one temperature sensing unit;

(g) at least one external electric source capable applying a current to control the voltage of said cathode; and

(h) a control unit receiving information from and/or capable of controlling said fuel gas control unit, oxidizing gas control unit, cell voltage detection unit, temperature sensing unit, load and said external electric source.

64. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising;

(a) starting fuel cell power generation;

(b) stopping fuel cell power generation, by;

(i) decreasing a flow of an oxidizing gas;

(ii) applying an external current from an

external electric source capable control the voltage of said cathode;

(iii) determining a temperature of the pair; and

(iv) decreasing a flow of a fuel gas and purging the pair with air if the temperature of the pair is falls below a threshold temperature.

65. The method of claim 64 wherein the threshold temperature is set such that voltage between the anode and cathode is between about 0.6V to about 0.8V.

66. The method of claim 64 wherein the threshold temperature is about 50 degrees Celsius.

67. The method of claim 64 wherein the air is dry.

68. A method of operating a fuel cell system comprising at least one anode and cathode pair comprising;

(a) starting fuel cell power generation;

(b) disconnecting a load;

(c) stopping fuel cell power generation, by;

(i) decreasing a flow of an oxidizing gas;

(ii) applying an external current from an external electric source capable control the voltage of said cathode;

(iii) determining a temperature of the pair; and

(iv) decreasing a flow of a fuel gas and purging the pair with air if the temperature of the pair is falls below a threshold temperature;

(d) increasing flow of oxidizing gas and the flow of fuel gas; and

(e) starting fuel cell power generation.

69. The method of claim 68 wherein the threshold temperature is set such that voltage between the anode and cathode is between about 0.6V and about 0.8V.

70. The method of claim 68 wherein the threshold temperature is about 50 degrees Celsius.

71. The method of claim 68 wherein the air is dry.

72. A method for operating a fuel cell comprising an electrolyte, an anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode,

the method comprising a step of carrying out a restoring operation by decreasing a voltage of the cathode, upon decreasing a voltage of the fuel cell to a threshold voltage or lower, or upon lapsing a prescribed period of time from a preceding restoring operation.

73. A method for operating a fuel cell comprising plurality of cells each containing an electrolyte, an

anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode,

the method comprising steps of carrying out a restoring operation by decreasing a voltage of cathode of at least one of the plurality of cells, and after restoring a voltage of the cells, sequentially carrying out a restoring operation for the remaining cells.

74. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises an operation such that electric power generation continues while a flow of the oxygen-containing gas to the cathode is decreased, and after lowering the fuel cell voltage to a restoring voltage of the cathode with respect to the anode, the flow of the oxygen-containing gas is then increased.

75. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises such an operation such that electric power generation continues while flow of the oxygen-containing gas is terminated, and after lowering the fuel cell voltage to a restoring voltage of the cathode with respect to the anode, flow of the oxygen-containing gas is restarted.

76. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises an

operation such that an inert gas or a hydrocarbon gas is fed to the cathode, and after lowering a fuel cell voltage to a restoring voltage of the cathode with respect to the anode, flow of the oxygen-containing gas is restarted.

77. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises an operation such that water is fed to the cathode, and after lowering the fuel cell voltage to a restoring voltage of the cathode with respect to the anode, feed of the oxygen-containing gas is restarted.

78. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises an operation such that a reducing agent is fed to the cathode, and after lowering the fuel cell voltage to a restoring voltage of the cathode with respect to the anode, feed of the oxygen-containing gas is restarted.

79. A method for operating a fuel cell as claimed in claim 72 or 73, wherein the restoring operation comprises an operation such that a load of the fuel cell is increased, and after lowering the fuel cell voltage to a restoring voltage of the cathode with respect to the anode, the load is decreased.

80. A method for operating a fuel cell comprising an electrolyte, an anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode,

the method comprising a step of carrying out a restoring operation by decreasing a voltage of the cathode, after terminating operation of the fuel cell.

81. A fuel cell system comprising a stack of cells each containing an electrolyte, an anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode, the fuel cell system further comprising a voltage detecting device for detecting a voltage of the cells or the stack, and a controlling device for controlling the feed of the oxygen-containing gas to the cells or the stack based on the voltage detected by the voltage detecting device.

82. A fuel cell system comprising a stack of cells each containing an electrolyte, an anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode, the fuel cell system further comprising a voltage detecting device for detecting a voltage of the cells or the stack, a feeding means for feeding water to the cells or the stack, and a controlling device for controlling the feeding means based on the voltage detected by the voltage detecting device.

83. A fuel cell system comprising a stack of cells each containing an electrolyte, one pair of electrodes sandwiching the electrolyte, and one pair of separator

plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode, the fuel cell system further comprising a voltage detecting device for detecting a voltage of the cells or the stack, a feeding means for feeding an inert gas, a hydrocarbon gas or a reducing agent to the cells or the stack instead of the oxygen-containing gas, and a controlling device for controlling the feeding means based on the voltage detected by the voltage detecting device.

84. A fuel cell system comprising a stack of cells each containing an electrolyte, an anode and a cathode sandwiching the electrolyte, and one pair of separator plates each having a gas flow path for feeding and discharging a fuel gas to the anode and for feeding and discharging an oxygen-containing gas to the cathode, the fuel cell system further comprising a voltage detecting device for detecting a voltage of the cells or the stack, an electric current adjusting device for increasing and decreasing an electric current applied to the cells or the stack, and a controlling device for controlling the electric current adjusting device based on the voltage detected by the voltage detecting device.

85. A method of operating a fuel cell system which is provided with a fuel cell having at least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the

cathode, and a pair of separator plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively, and which switches connection and disconnection between the fuel cell and a load, wherein;

feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are continued until a prescribed period of time elapses after disconnection between the fuel cell and the load, and thereafter, feeding of each of the oxidizing agent gas and the fuel gas is stopped, thereby controlling the operation such that the time when the cell of the fuel cell has a voltage of about 0.9 V or more to be less than about 10 minutes after stopping either gas.

86. The method according to claim 85, wherein feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are continued until a prescribed period of time elapses after disconnection between the fuel cell and the load, and thereafter, feeding of the oxidizing agent gas and feeding of the fuel gas are stopped substantially simultaneously.

87. The method according to claim 85, wherein feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are continued until a prescribed period of time elapses after disconnection between the fuel cell and the load, feeding of the oxidizing agent gas is then stopped, and thereafter, feeding of the fuel gas is stopped.

88. The method according to claim 85, wherein feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are continued until a prescribed period of time elapses after disconnection between the fuel cell and the load, feeding of the fuel gas is then stopped, and thereafter, feeding of the oxidizing agent gas is stopped.

89. A method of operating a fuel cell system which is provided with a fuel cell having at least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the cathode, and a pair of separator plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively and which switches connection and disconnection between the fuel cell and a load, wherein;

before disconnection between the fuel cell and the load, at least one of feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode is stopped, and thereafter, disconnection between the fuel cell and the load is carried out.

90. The method according to claim 89, wherein before disconnection between the fuel cell and the load, feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are stopped, and thereafter, disconnection between the

fuel cell and the load is carried out.

91. The method according to claim 89, wherein before disconnection between the fuel cell and the load, feeding of the oxidizing agent gas into the cathode is stopped, disconnection between the fuel cell and the load is then carried out, and thereafter, feeding of the fuel gas into the anode is stopped.

92. The method according to claim 89, wherein before disconnection between the fuel cell and the load, feeding of the fuel gas into the anode is stopped, disconnection between the fuel cell and the load is then carried out, and thereafter, feeding of the oxidizing agent gas into the cathode is stopped.

93. The method according to claim 89, wherein before disconnection between the fuel cell and the load, at least one of feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode is stopped; thereafter, when the voltage of the cell of the fuel cell decreases to a prescribed lower limit voltage, disconnection between the fuel cell and the load is carried out; thereafter, when the voltage of the cell of the fuel cell rises to a prescribed upper limit voltage, connection between the fuel cell and the load is carried out; and thereafter, a step in which when the voltage of the cell of the fuel cell decreases to a prescribed lower limit voltage, disconnection between the fuel cell and the load is carried out; and a step in which when the voltage of

the cell of the fuel cell rises to a prescribed upper limit voltage, connection between the fuel cell and the load is carried out are repeated until the voltage of the cell of the fuel cell does not reach a prescribed upper limit voltage.

94. A fuel cell system which is provided with a fuel cell having at least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the cathode, and a pair of separator plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively and a control unit of controlling switch of connection and disconnection between the fuel cell and a load, wherein;

the control unit is constructed such that feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode are continued until a prescribed period of time elapses after disconnection between the fuel cell and the load, and thereafter, feeding of each of the oxidizing agent gas and the fuel gas is stopped, thereby controlling the time when the cell of the fuel cell has a voltage of about 0.9 V or more to be less than about 10 minutes after stopping either gas.

95. A fuel cell system which is provided with a fuel cell having at least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the cathode, and a pair of separator

plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively and a control unit of controlling switch of connection and disconnection between the fuel cell and a load, wherein

the control unit is constructed such that before disconnection between the fuel cell and the load, at least one of feeding of the oxidizing agent gas into the cathode and feeding of the fuel gas into the anode is stopped, and thereafter, disconnection between the fuel cell and the load is carried out.

96. A method of operating a fuel cell system provided with a fuel cell having at least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the cathode, and a pair of separator plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively, wherein;

when the fuel cell stops power generation, the cathode is controlled so as to have a voltage with respect to a standard hydrogen electrode within the range of from about 0.6 V to about 0.8 V.

97. The method according to claim 96, wherein in a state of exposing the anode to the fuel gas, feeding of the oxidizing agent gas into the cathode is stopped, and a prescribed voltage is applied between the anode and the cathode using an external electric source, thereby

controlling the cathode so as to have a voltage with respect to a standard hydrogen electrode within the range of from about 0.6 V to 0.8 V.

98. The method according to claim 96, wherein the fuel cell is a fuel cell stack comprising stacked plurality of cells, and in the state of exposing the anode of each cell to the fuel gas, feeding of the oxidizing agent gas into the cathode of each cell is stopped, and a prescribed voltage is applied between the anode and the cathode of each cell using an external electric source, thereby controlling the cathode of each cell so as to have a voltage with respect to a standard hydrogen electrode within the range of from about 0.6 V to about 0.8 V.

99. The method according to claim 96, wherein after stopping the power generation of the fuel cell until the cell temperature of the fuel cell drops to below about 50 degrees Celsius, the cathode is controlled so as to have a voltage against a standard hydrogen electrode within the range of from about 0.6 V to about 0.8 V.

100. The method according to claim 99, wherein when the fuel cell stops the power generation and when the cell temperature of the fuel cell drops to below about 50 degrees Celsius, the cathode and the anode are purged with air.

101. The method according to claim 100, wherein the purge is carried out using dry air.

102. A fuel cell system provided with a fuel cell having at

least one cell provided with an electrolyte, an anode and a cathode each having a platinum based metallic catalyst, the electrolyte being put between the anode and the cathode, and a pair of separator plates having gas passages for feeding a fuel gas into the anode and feeding an oxidizing agent gas into the cathode, respectively and a control unit for controlling feeding of the fuel gas into the anode and feeding of the oxidizing agent gas into the cathode, respective, wherein

an external electric source of applying a prescribed voltage between the anode and the cathode is provided; and

the control unit is constructed such that when the fuel cell stops power generation, in the state of exposing the anode to the fuel gas, feeding of the oxidizing agent gas into the cathode is stopped, and the external electric source are controlled so as to apply a prescribed voltage between the anode and the cathode, thereby controlling the cathode so as to have a voltage against a standard hydrogen electrode within the range of from about 0.6 V to about 0.8 V.

103. The fuel cell system according to claim 102, wherein the fuel cell is a fuel cell stack comprising stacked plural cells, and the control unit is constructed such that in the case where the fuel cell stack stops power generation, in the state of exposing the anode of each cell to the fuel gas, feeding of the oxidizing agent gas into the cathode of each cell is stopped, and the motions of the external electric source are controlled

so as to apply a prescribed voltage between the anode and the cathode of each cell, thereby controlling the cathode of each cell so as to have a voltage against a standard hydrogen electrode within the range of from about 0.6 V to about 0.8 V.

104. The fuel cell system according to claim 102, wherein the fuel cell system is further provided with a temperature sensor for measuring the cell temperature of the fuel cell; and when the control unit judges that the cell temperature of the fuel cell drops to below about 50 degrees Celsius, the external electric source is controlled so as to stop the application of a voltage between the anode and the cathode.

105. The fuel cell system according to claim 104, wherein when the control unit judges that the cell temperature of the fuel cell drops to below about 50 degrees Celsius, the cathode and the anode are purged with air.

106. The fuel cell system according to claim 105, wherein the purge is carried out using dry air.